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III.—Observations on the Stature, Bodily Weight, Magnitude of Chest, and Physical Strength of the New Zealand Race of Men.
By Dr. ARTHUR SAUNDERS THOMSON, 58th Regt.

Communicated by the COLONIAL-OFFICE.

Read May 10, 1852.

“THE stature of the men of New Zealand,” observes Captain Cook, “in general is equal to the largest of those in Europe; they are stout, well limbed, and fleshy.” Almost every succeeding writer since then has described the New Zealanders as a tall, strong, and well-proportioned race. But as such statements convey to the mind no definite information and furnish no data by which a comparison can be made with other races of men, I have thought some interesting, if not useful, information might be derived from a statistical inquiry into the above subjects.

1st. On the Stature.—During the month of April, 1849, many natives of New Zealand presented themselves at the military hospital for vaccination, and on that occasion I took down, indiscriminately, the height of 147 men, and the results were as follows:—

	Ft.	in.	Ft.	in.	
6 men were	5	0	to	5	1 in height.
1 man was	5	2	to	5	3 "
2 men were	5	3	to	5	4 "
9 ",	5	4	to	5	5 "
20 ",	5	5	to	5	6 "
37 ",	5	6	to	5	7 "
20 ",	5	7	to	5	8 "
18 ",	5	8	to	5	9 "
17 ",	5	9	to	5	10 "
13 ",	5	10	to	5	11 "
2 ",	5	11	to	5	12 "
1 ",	5	12	to	5	13 "
1 ",	6	5½	—		"

The mean height of these 147 New Zealanders was 5 feet 6 inches and nearly $\frac{3}{4}$ of an inch.

For the sake of comparison, I examined 617 men of the 58th regiment, and found their average height was 5 feet $7\frac{3}{4}$ inches; but as soldiers are a selected body, and many men are rejected in consequence of low stature, it is obvious this is not a fair comparison. I have, therefore, to obviate this objection, drawn up the following statement:—

TABLE showing out of 100 New Zealanders and 100 natives of Great Britain and Ireland* the proportion of men among each race above 5 feet 6 inches in height :—

Stature,		Out of 100 New Zealanders there were	Out of 100 Natives of Great Britain there were
From 5 ft. 6 in. to 5 ft. 7 in.. . .		35	25
5 7 , , 5 8 . . .		18	24
5 8 , , 5 9 . . .		17	22
5 9 , , 5 10 . . .		15	14
5 10 , , 5 11 . . .		12	9
5 11 and upwards . . .		3	6
Total		100	100

It will be seen from the above that there is no very great difference in the stature of the two races.

The Table is thus read :—Out of 100 natives of New Zealand, 35 are from 5 feet 6 inches to 5 feet 7 inches in height; whereas among the natives of Great Britain there are only 24 between this standard; and it will be seen that the number of men from 5 feet 9 inches to 5 feet 10 inches, among each race, is similar; but among the English there are twice as many men 5 feet 11 inches and upwards as there are among the New Zealanders.

It is not, however, in my power in this country to make a fair comparison on this question; but I have furnished materials which will enable others to do so. I may, however, observe that Haller reckons the mean height of the men in the temperate countries of Europe to be 5 feet 5 inches and 5 feet 6 inches.

The New Zealanders, like the English, do not reach their full stature until they are upwards of 20 years of age: and the mean height of 46 men, from 16 to 20, was 5 feet 6 inches; whereas, from 21 to 25, it was 5 feet $6\frac{3}{4}$ inches.

The natives of New Zealand have no idea of years with reference to their age, so that when I speak of their age it is to be clearly understood that it is an age given to them by myself from their general appearance.

On the Bodily Weight.—A man may have a certain stature,

* The Natives of Great Britain and Ireland, from which the data of this Table are drawn, were soldiers of the 58th Regiment. Among the men observed, the Grenadier and Light Companies were included (generally the largest men in the Regiment), and out of 617 men there were

27 men 5 ft. 5 in. to 5 ft. 6 inches in height.
 149 , , 5 6 , , 5 7 , ,
 140 , , 5 7 , , 5 8 , ,
 129 , , 5 8 , , 5 9 , ,
 84 , , 5 9 , , 5 10 , ,
 54 , , 5 10 , , 5 11 , ,
 34 , , 5 11 , , 6 3 , ,

but unless he has weight of body he will not be able to undergo much labour. With the view of ascertaining the bodily weight of the New Zealanders, I carefully weighed, in a common lever balance, 150 men, and found—

8	men	were	8	stone	in weight, but under	9	stone.
25	"	9	"	"		10	"
54	"	10	"	"		11	"
41	"	11	"	"		12	"
19	"	12	"	"		13	"
3	"	13	"	"		14	"

The average weight of these 150 New Zealanders, deducting their mats and clothes, was 10 stone 1 lb., avoirdupois.* With the same balance and weights I examined 617 men of the 58th regiment, and found their average weight was 10 stone 3 lbs.

It therefore appears that, so far as weight of body is concerned, there is little or no difference between the two races.

To render this difference more obvious, and to point out what weight is most common, I have drawn up the following statement.

TABLE showing out of 100 natives of New Zealand and 100 natives of Great Britain † the proportion of men found of different weights:—

Weights.	Out of 100 New Zealanders there were	Out of 100 Natives of Great Britain there were
8 stone but under 9	5	2
9 , , 10	17	19
10 , , 11	36	36
11 , , 12	27	33
12 , , 13	13	8
13 stone and upwards	2	2
Total	100	100

This Table shows how remarkably similar the two races are in weight.

With the view of showing what influence age has on weight I have drawn up the following statement.

* The New Zealanders from whom these observations were drawn were generally either Waikato natives or men employed upon public works. Both classes are better fed than the natives generally of New Zealand; the Waikato from their trade in pigs, and the men on the works from the pay they receive for their labour.

† Out of 622 Soldiers of the 58th Regiment

2	men	were	7	stone	but under	8
15	,	,	8	"		9
115	,	,	9	"		10
224	,	,	10	"		11
206	,	,	11	"		12
46	,	,	12	"		13
7	,	,	13	"		14
1	,	,	14	"		15
6	,	,	15			

TABLE showing the average weight of New Zealanders and natives of Great Britain at different periods of life :—

Ages.	New Zealanders.		English, Scotch, and Irish.	
	Number observed.	Average Weight.	Number observed.	Average Weight.
From 16 to 20 years, inclusive .	46	Stone. lbs.	47	Stone. lbs.
21 to 25 , .	40	9 7	274	9 11
26 to 30 , .	47	10 5	213	10 4
30 and upwards . . .	11	10 5½	83	10 4½
Total	144	10 1	617	10 2
				10 3

Under 21 years of age the New Zealanders are less developed than the soldiers ; but after 21 years of age the bodily weight of the New Zealanders is always a little above the soldiers of the 58th regiment.

I may here observe that the falling away in bodily weight, which the foregoing Table shows, after 30 years of age is, I am induced to think, peculiar to soldiers ; for it has been remarked there is something in the life of a private soldier more deteriorating to the constitution than the life of a day-labourer.

Among Europeans in civil life the weight of the body, like that of the New Zealander, will probably be found to increase up to 45 years of age.

The New Zealanders, as all men in a savage state, are indolent and lazy, working only when there is an absolute necessity for so doing. A few days' labour will enable them to plant sufficient food to sustain them for a year ; and a great portion of their time afterwards is often spent in a dreamy state of idleness—a life which tends to develope the accumulation of fat, and to increase the weight of the body. As the New Zealanders advance in life the amount of labour they perform generally diminishes.

Among many races of men there is some particular part of the body where a great development of muscle or fat is found, which peculiarity adds to the size and weight of the body. This development is found in the lower extremities of the New Zealanders ; for, with few exceptions, their thighs and legs are much larger than those of Europeans.

On the Magnitude of the Chest.—There is a popular opinion that people who have large chests are able to undergo much labour and endure great fatigue. I have therefore examined the mean girth of the chest* of 151 New Zealanders, and found the following results :—

* The examination is made by passing a measuring tape round the chest on a level with the mammillæ, the arms being raised above the head so as to remove as much of the muscular substance as possible ; during the time of measurement the

1 man's chest measured 29 inches, and under	30 inches.
2 , ,	30 , ,
3 , ,	31 , ,
14 , ,	32 , ,
9 , ,	33 , ,
25 , ,	34 , ,
33 , ,	35 , ,
28 , ,	36 , ,
23 , ,	37 , ,
9 , ,	38 , ,
3 , ,	39 , ,
1 , ,	40½

The mean circumference of the chest of these 151 New Zealanders was 35·36 inches.

To prevent any mistake, with the same measure that I took the magnitude of the New Zealanders' chests I carefully examined 628 men of the 58th regiment,* and found their mean girth of chest was 35·71 inches.

It therefore appears there is very little difference in the magnitude of the chest of the two races of men. The small amount of difference disappears when the comparison is made in the following manner.

TABLE showing the average circumference of the chest of the Natives of New Zealand and the Natives of Great Britain at different periods of life :—

Ages.	New Zealanders.		Natives of Great Britain.	
	Number observed.	Average Number of Inches round the Chest.	Number observed.	Average Number of Inches round the Chest.
From 16 to 20 years . .	46	Inches.	47	Inches.
21 to 25 , ,	40	33·32	274	34·90
26 to 30 , ,	47	35·82	213	35·55
Above 30	11	35·92	83	35·91
Total	144	35·95	617	35·76
		35·26		35·71

person was engaged in conversation, so as to prevent the chest being unusually distended with air.

* Of the 628 men of the 58th Regiment examined

1 man's chest measured 29 inches but under 30

1 , ,	30 , ,	31
6 , ,	31 , ,	32
27 , ,	32 , ,	33
49 , ,	33 , ,	34
97 , ,	34 , ,	35
145 , ,	35 , ,	36
133 , ,	36 , ,	37
85 , ,	37 , ,	38
56 , ,	38 , ,	39
19 , ,	39 , ,	40
7 , ,	40 , ,	41
0 , ,	41 , ,	42
1 , ,	42 , ,	43
1 , ,	43.	

It will be seen that, from 16 to 20 years of age, the New Zealanders' chests are more than $\frac{1}{2}$ an inch smaller than those of the soldiers; after this age the similarity in the two races is very great. At first sight it might be expected, as the English are a taller race, their chests should be larger; but it has been found, by the measurement of 1400 recruits by Staff-Surgeon Balfour, that stature has not a very great effect on the girth of the chest.

On the Physical Strength.—Having had weights arranged so that they might be raised from the ground with both hands, I collected 31 New Zealanders, and found they raised the following number of pounds, avoirdupois:—

	lbs.	lbs.
6 New Zealanders raised	410 to 420	
2 "	400 to 410	
5 "	390 to 400	
3 "	380 to 390	
6 "	360 to 380	
5 "	340 to 360	
2 "	336	
2 "	250 to 266	

The mean weight raised by these men was 367 lbs.; the greatest, 420; the smallest, 250.

I then got 31 soldiers, taken indiscriminately, whose average weight was 10 stone 4 lbs., without their clothing, and found they raised from the ground, with the same arrangement of weights, as follows:—

	lbs.	lbs.
2 men raised	504	
8 "	460 to 480	
14 "	400 to 460	
9 "	350 to 400	

The average weight raised by these 31 soldiers was 422 lbs., or 55 lbs. more than the men of New Zealand.

It is therefore obvious that, in physical strength, the English are far superior to the New Zealanders.

The New Zealanders taken for this trial were chiefly on the Government works, men accustomed to lift weights, and better fed than many of their countrymen.

Perron, in his ‘Voyages des Découvertes aux Terres Australes,’ states that the weakest Frenchman was equal in the hands to the strongest man of Van Diemen’s Land; and the weakest Englishman stronger than the strongest New Hollander. If such be the case, the natives of New Zealand, although inferior to the English, are much superior to the natives of New Holland.

Concluding Remarks.—From the foregoing facts the following results are deduced.

1st. That the men of New Zealand are about $\frac{1}{4}$ of an inch lower in stature than the soldiers of the 58th regiment; and that

there are comparatively few men among them above 5 feet 11 inches.

2nd. That the average height of the New Zealanders is $\frac{1}{2}$ an inch higher than the mean height Haller states the men of the temperate countries of Europe to be.

3rd. That the New Zealanders do not reach their full stature until they advance over 20 years of age.

4th. That the bodily weight of the natives of New Zealand and of the men of the 58th regiment is very similar.

5th. That after 30 years of age the New Zealanders increase in weight ; but that after this soldiers lose flesh.

6th. That about 20 years of age the English are more developed than the New Zealanders.

7th. That the mean girth of the chest of both races is very similar.

8th. That the New Zealanders are in physical strength inferior to the inhabitants of Great Britain.

The great difference between the two races *in physical strength* is what would not be expected from their similarity in stature, weight of body, and magnitude of chest. This result I am inclined to attribute solely to a large proportion of the New Zealander's food being composed of vegetable matter—a diet which, it is said, tends to develope the accumulation of fat in the system, without adding much, if at all, to the substance of the muscles.

To those who delight in thinking that the world is degenerating, and that men were stronger in olden time, before trade and civilization had changed the manners and customs of men, the foregoing facts may prove interesting ; for here we observe the New Zealanders, a race just emerging from the darkest savage state, and we find that in physical strength they are much inferior to men drawn from a country where machinery and civilization have produced changes in the manners and habits of the people to an extent unknown among other civilized races.

IV.—*Survey of the Sea of Aral.* By Commander ALEXEY BUTAKOFF, of the Imperial Russian Navy.

Communicated in a letter to Sir RODERICK I. MURCHISON.

Read December 13, 1852.

SIR,—I have the honour to submit to your indulgent consideration the subjoined short notice on the Sea of Aral, explanatory of the chart, which I hope you have already received. However incomplete, I flatter myself with the idea that it will not be with-